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REMARKS

Favorable reconsideration of this application is requested in view of the above amendments and the following remarks. Claims 1-18 and 20-22 are pending. Claim 1 has been amended, as supported by paragraphs [0048], [0050], [0051], [0073], and [0074] of the specification, and FIGs. 1D to 1F. Claim 19 has been rewritten as new independent claim 22 and includes the features of amended claim 1. Editorial changes have been made in the remaining claims.

The specification has been amended to correct a typographical error in the identification of a publication discussed in the specification. The reference was submitted previously and identified correctly in the IDS.

Applicants appreciate the courtesy shown by the Examiner and her supervisor in discussing this case with the undersigned on April 15, 2008. The revisions to claim 1 were discussed in the interview.

Claims 1-5 have been rejected as obvious over "Background" in view of Kashima. The rejection contends that the beads 20 in layer 18 of Kashima would have rendered it obvious to provide the glass spheres of Background at random locations in the thickness direction. Applicants respectfully traverse this rejection.

Claim 1 is directed to an enclosed lens type retroreflective sheet. In enclosed lens type retroreflective systems, the glass spheres are surrounded by resin and spaced from a metal reflecting layer by resin. This is in contrast to an encapsulated lens type retroreflective system in which a reflective mirror is formed on the lower portion of the spheres and an air layer is formed between the glass spheres and a covering film. Claim 1 further clarifies that the retroreflective sheet has glass spheres that provide different optical properties, some providing reflective performance at a small observation angle and up to a large incidence angle, and others providing reflective performance at a larger observation angle and up to a large incidence angle. In the latter group, the thickness of the focusing layer at the glass spheres is thinner than a focus formation position for the glass spheres. In other words, the thickness is less than the focal length of the glass spheres. See, for example the dimensions L1 and L2 in Fig. 1F. This also can be understood for example from Figs. 8B and 8D, where the first glass sphere group exhibits reflective performance at a relatively small observation angle like b1 to b2 of Fig. 8B, versus the angle f1 to f2 of Fig. 8D.

The invention of claim 1 provides an enclosed lens type retroreflective system that, as shown in the results reported in the present specification (see Figs. 2-6 and 9-11, for example), provides performance that meets or exceeds that of the encapsulated lens type system (identified as "HI" in the figures). The encapsulated lens type system in the past generally was considered to provide superior reflective performance to enclosed type lens systems.

Neither "Background" nor Kashima provides the different groups of glass spheres with difference reflective properties as required by claim 1. In the "Background" technology, all of the spheres are provided at a constant position relative to the surface layer. Kashima provides glass beads for the purpose of reducing interference fringes. In Kashima, the reduction in interference fringes is not provided by the beads distributed through the thickness of the coating layer, but by the beads that protrude from the surface of the coating layer and are arranged in a random two-dimensional pattern at the surface. See Col. 11, lines 5-8 and 23-28 of the reference. There is no discussion of any desired effect from the beads present within the coating layer; these are simply a by-product of the production process that conveniently produces the desired distribution of protruding beads. Therefore Kashima does not remedy the deficiencies of "Background".

Applicants further submit that the teachings of Kashima cannot reasonably be combined with "Background" unless hindsight is used impermissibly. Kashima is directed to a light transmissive system that seeks to reduce interference fringes by the presence of beads that protrude from the surface of the coating layer and are arranged in a random two-dimensional pattern at the surface. See Col. 11, lines 5-8 of the reference. There is no discussion of any desired effect from the beads present within the coating layer, which essentially are present as a by-product of the process that conveniently produces the desired distribution of protruding beads at the surface. Even if both "Background" and Kashima can be considered to concern optical sheets with beads for affecting a light beam as suggested in the rejection, this alone does not justify combining the teachings in view of the gross differences between the two types of products, manifested by the fact that Kashima pays little or no attention to the aspects of the layer that are essential in the enclosed type lens retroreflective sheet.

The differences between the Kashima system and the enclosed lens type retroreflective systems are demonstrated further by Kashima's requirement that beads and the binder resin have substantially the same refractive index (cols. 12-13 and 21), and that the beads have a small size

(col. 11, note that Table 1 and col. 21 show that a 15um bead was too large and showed interference fringes). Thus, Kashima seeks to avoid having the beads within the layer have any significant refraction or other effect on the light. This is antithetical to the operation of the enclosed lens type retroreflective sheet. The features of claims 6 and 7 thus are even further removed from the combination of "Background" and Kashima.

The rejection contends that the reduction of interference fringes would justify applying the Kashima teachings to "Background". However, nothing in the present record establishes that interference fringes are of particular concern in an enclosed lens type retroreflective sheet. In addition, even if this were relevant, as noted above in Kashima the effect of reducing interference fringes is achieved with the beads protruding from the surface layer. This is not relevant to the enclosed lens type retroreflective sheet, and therefore does not provide any reasonable support for the combination. The rejection also suggests the economic considerations could justify the combination. However, the "economic" aspects in Kashima are directed to the provision of the beads protruding from the surface layer to reduce the interference fringes. This has been shown to be totally irrelevant to an enclosed lens type retroreflective system and thus any "economy" in Kashima would be seen to serve no purpose in "Background". Pages 7-8 of the Office Action also make reference to Fresnel reflection. Applicants do not understand the potential relevance of this point to retroreflective systems, and courteously request further explanation if this point is to be used to justify the combination of "Background" and Kashima.

The remaining rejections rely on the Background and Kashima in combination with additional references. These references do not remedy the deficiencies of the Background-Kashima combination and should be withdrawn for at least the same reasons.

In view of the above, Applicants request reconsideration of the application in the form of
a Notice of Allowance.

Respectfully submitted,

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